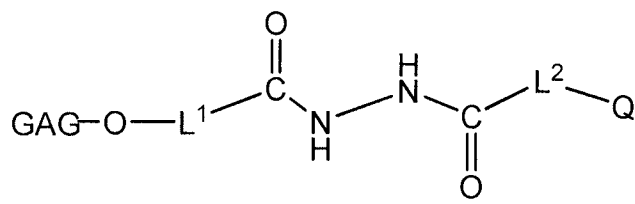


Amendments to the Claims

The following listing reflects amendments to the claims and replaces all prior versions and listings of claims in this application.

1. (Currently Amended) A modified-glycosaminoglycan ~~comprising~~ corresponding to the structure: a glycosaminoglycan in which at least one hydroxyl group present in the molecular structure of the glycosaminoglycan has been chemically modified so that oxygen atom of the hydroxyl group is covalently bound to a hydrazide-reactive group or an aminoxy reactive group instead of a hydrogen atom



wherein

"GAG" is a glycosaminoglycan possessing a plurality of hydroxyl groups,

"GAG-O" represents a residue of a hydroxyl group on the glycosaminoglycan

L¹ and L² are each independently selected from the group consisting of hydrocarbyl, substituted hydrocarbyl, heterohydrocarbyl, and substituted heterocarbyl, and

Q is selected from a bioactive agent, -SH, or a thiol-reactive functional group, and wherein 0.1% to 100% of the glycosaminoglycan's hydroxyl groups are substituted with -L¹C(O)NH-NH-C(O)-L²-Q.

2. (Currently Amended) The modified-glycosaminoglycan of claim 1, wherein the glycosaminoglycan ~~comprises~~ is selected from the group consisting of chondroitin, chondroitin sulfate, dermatan, dermatan sulfate, heparin, or heparan sulfate.

3. (Previously Presented) The modified-glycosaminoglycan of claim 1, wherein the glycosaminoglycan comprises hyaluronan.

4. (Currently Amended) The modified-glycosaminoglycan of claim 3, wherein the "GAG-O-" represents the residue of a at least one hydroxyl group that is a primary C-6 hydroxyl group contained within an N-acetyl-glucosamine residue present in the molecular structure of the hyaluronan.

5. (Currently Amended) The modified-glycosaminoglycan of claim 4, wherein at least one secondary hydroxyl group ~~present in the molecular structure of the hyaluronan has also been modified so that the oxygen atom of the secondary hydroxyl group is covalently bound to the hydrazide reactive group or the aminoxy reactive group is~~ substituted with $-L^1C(O)NH-NH-C(O)-L^2-Q$.

6. (Currently Amended) The modified-glycosaminoglycan of claim 4, wherein ~~up to 100~~ from 0.1 % to 40% of the primary C-6 hydroxyl groups of the N-acetyl-glucosamine residues in the glycosaminoglycan ~~structure are chemically modified so that the hydrogen atom of each hydroxyl group is replaced with the hydrazide reactive group or the aminoxy reactive group~~ are substituted with $-L^1C(O)NH-NH-C(O)-L^2-Q$.

7. (Currently Amended) The modified-glycosaminoglycan of claim 1, wherein the "GAG-O-" represents the residue of a at least one hydroxyl group that is a primary C-6 hydroxyl group contained within the a non-uronic acid sugar component of the a repeating disaccharide of the glycosaminoglycan.

8. (Currently Amended) The modified-glycosaminoglycan of claim 1, wherein ~~the hydrazide reactive group or the aminoxy reactive group is selected from carboxyl, a carboxylate salt and a carboxylic acid ester~~ L^1 is an alkylene group.

9. (Currently Amended) The modified-glycosaminoglycan of claim 1, wherein ~~the hydrazide reactive group or the aminoxy reactive group has the formula $-L-CO_2H$ or is a salt or ester thereof, wherein L comprises an unsubstituted hydrocarbyl group, an~~

~~unsubstituted heterohydrocarbyl group, a substituted hydrocarbyl group, and a substituted heterohydrocarbyl group~~ L¹ is -CH₂-.

10. (Currently Amended) The modified-glycosaminoglycan of claim 9, wherein L² ~~comprises~~ is a polyalkylene group having the formula (CH₂)_n, wherein n is from 1 to 10.

11-23. (Cancelled)

24. (Currently Amended) ~~A~~ The modified-glycosaminoglycan made by the process of claim 14 of claim 10, wherein n is 2 or 3.

25. (Currently Amended) The modified-glycosaminoglycan of claim 24, ~~comprising two or more hydrazide groups~~ wherein n is 2.

26 - 50. (Cancelled)

51. (Currently Amended) The compound of claim ~~50~~ 1, wherein the macromolecule GAG comprises a sulfated-glycosaminoglycan.

52. (Currently Amended) The compound of claim ~~234~~ 51, wherein the ~~macromolecule comprises chondroitin~~, GAG is selected from the group consisting of chondroitin sulfate, dermatan, dermatan sulfate, heparin, and heparan sulfate, alginic acid, pectin, or carboxymethylcellulose.

53. (Currently Amended) The compound of claim ~~234~~ 24, wherein the macromolecule comprises hyaluronan and Q is -SH.

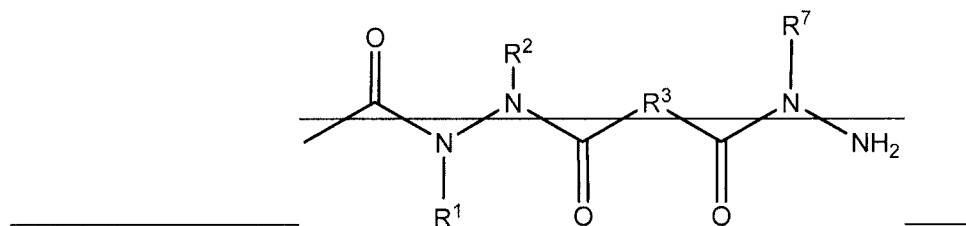
54. - 198. (Canceled)

199. (Withdrawn, Currently Amended) A pharmaceutical composition comprising a bioactive agent and a the modified glycosaminoglycan of claim 1, in which at least one hydroxyl group has been modified so as to replace the hydrogen atom of the group with a hydrazide reactive group or an aminoxy reactive group, or a wherein the modified glycoasminoglycan may be crosslinked such modified glycosaminoglycan.

200. (Currently Amended) A pharmaceutical composition comprising a living cell and ~~a~~the modified glycosaminoglycan of claim 1, ~~in which at least one hydroxyl group has been modified so as to replace the hydrogen atom of the group with a hydrazide-reactive group or an aminooxy-reactive group, or a~~ where the modified glycosaminoglycan may be crosslinked such modified glycosaminoglycan.

201. - 223. Cancelled.

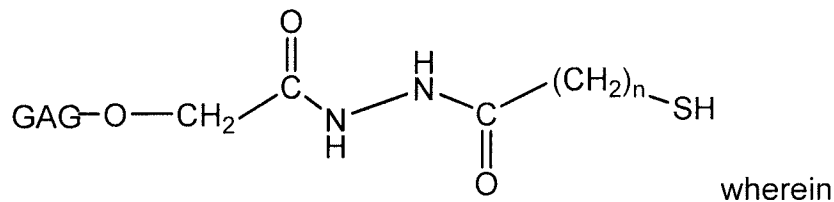
224. (Currently Amended) The modified glycosaminoglycan of ~~claim 1 or claim 24, containing at least one substituent having the structure of formula (I)~~



wherein

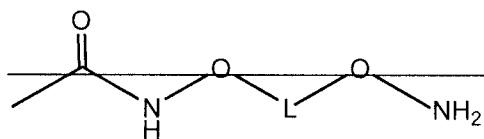
~~R¹, R², and R⁷ are independently selected from hydrogen, hydrocarbyl, substituted hydrocarbyl, heterohydrocarbyl, and substituted heterohydrocarbyl, and R³ is selected from hydrocarbyl, substituted hydrocarbyl, heterohydrocarbyl, and substituted heterohydrocarbyl~~

corresponding to the structure:



0.1% to 40% of the glycosaminoglycan's primary hydroxyl groups are substituted with -CH₂C(O)NH-NH-C(O)(CH₂)_n-SH.

225. (Currently Amended) The modified glycosaminoglycan of claim ~~1 or claim 24~~, containing at least one substituent having the structure of formula (II)

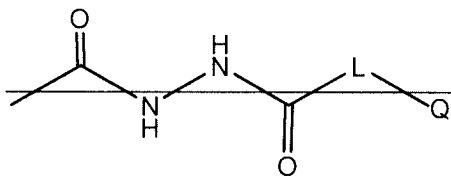


wherein

~~L is selected from hydrocarbyl, substituted hydrocarbyl, heterohydrocarbyl, and substituted heterohydrocarbyl~~ 224, wherein the GAG is hyaluronan.

226. (Currently Amended) The modified glycosaminoglycan of claim 225, wherein ~~L is selected from polyether, polyamide, polyimino, aryl, polyester, polythioether, polysaccharyl, and combinations thereof~~ n is 2.

227. (Currently Amended) The modified glycosaminoglycan of claim 1 or claim 24, containing at least one substituent having the structure of formula (III)



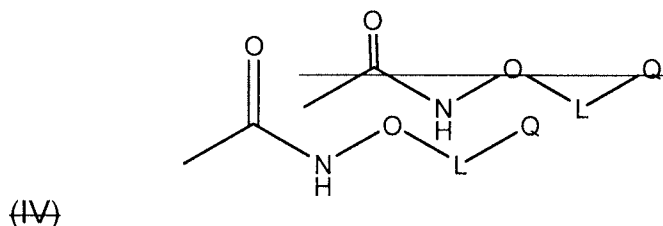
wherein:

~~L is selected from hydrocarbyl, substituted hydrocarbyl, heterohydrocarbyl, and substituted heterohydrocarbyl; and~~

~~Q is a bioactive agent, an SH group, or a thiol-reactive electrophilic functional group~~ wherein Q is a bioactive agent.

228. (Currently Amended) The modified glycosaminoglycan of claim 227, wherein ~~L is selected from polyether, polyamide, polyimino, aryl, polyester, polythioether, polysaccharyl, and combinations thereof~~ 1, wherein Q is a thiol-reactive group.

229. (Currently Amended) A composition comprising the ~~The modified~~ glycosaminoglycan of claim 1 ~~or claim 24~~, containing ~~at least one substituent having the structure of formula (IV)~~



wherein:

~~L is selected from hydrocarbyl, substituted hydrocarbyl, heterohydrocarbyl, and substituted heterohydrocarbyl; and~~

~~Q is a bioactive agent, an aminoxy group, an SH group, or a thiol reactive electrophilic functional group~~ 224 in a crosslinked form.

230. (Currently Amended) ~~The modified glycosaminoglycan of claim 229, wherein L is selected from polyether, polyamide, polyimino, aryl, polyester, polythioether, polysaccharyl, and combinations thereof~~ n is equal to 2.

231. - 233. Cancelled.

234. (Currently Amended) The composition of claim 229, wherein the A ~~compound comprising at least one fragment having the structure Y-S-S-G, wherein Y is a modified glycosaminoglycan~~ is crosslinked with ~~in which at least one hydroxyl group has been modified so as to replace the hydrogen atom of the group with a hydrazide-reactive group or an aminoxy reactive group, and G comprises a residue of a thiolated compound.~~

235. (Currently Amended) The composition of claim 234, wherein the thiolated compound is a thiolated collagen or a thiolated gelatin ~~A compound comprising at least one fragment having the structure Y-(CO)-NH-NH-(CO)-L-S-S-G, wherein:~~

~~L is selected from hydrocarbyl, substituted hydrocarbyl, heterohydrocarbyl, and substituted heterohydrocarbyl;~~

~~Y is a modified glycosaminoglycan in which at least one hydroxyl group has been modified so as to replace the hydrogen atom of the group with a hydrazide reactive group or an aminooxy reactive group; and~~

~~G comprises a residue of a thiolated compound.~~

236. (Currently Amended) The compound composition of claim 235, wherein ~~L is selected from polyether, polyamide, polyimino, aryl, polyester, polythioether, polysaccharyl, and combinations thereof~~ the thiolated compound is a thiolated gelatin, and further wherein the thiolated gelatin is gelatin-DTPH.

237. (Currently Amended). ~~Use of the~~ The composition of claim 229, wherein the modified glycosaminoglycan of claim 1 to prevent adhesion after a surgical procedure is crosslinked with polyethyleneglycol diacrylate (PEGDA).

238. Cancelled.

239. (Currently Amended) ~~Use of the~~ The modified glycosaminoglycan of claim 1 or the composition of claim 229, which is effective to support the growth of primary cells or immortalized cells.

240. (Currently Amended) ~~Use of the~~ The modified glycosaminoglycan of claim 4 or the composition set forth in claim 239, wherein the cells are selected from the group consisting of to support the growth of tumor cells, fibroblasts, chondrocytes, stem cells, epithelial cells, neural cells, cells derived from the liver, endothelial cells, cardiac cells, muscle cells, ~~or and~~ osteoblasts.

241. Cancelled.

242. (Currently Amended) An article comprising a coating comprising ~~coated with~~ the modified glycosaminoglycan of claim 1.

243. (Previously Presented) The article of claim 242, wherein the article is a suture, a clamp, stent, a prosthesis, a catheter, a metal screw, a bone plate, a pin or a bandage.

244. (Currently Amended) A 3-D cell culture comprising ~~Use of~~ the modified glycosaminoglycan of claim 1 ~~as a 3-D cell culture~~.

245. Cancelled.

246. Cancelled.